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Environmental Strategy & Engineering

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James M. DiLorenzo
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Office of Site Remediation and Restoration
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Boston, MA 02114-2023

RE: Comments on OU3 Data Gap Analysis
and Additional Field Studies Work Plan
Olin Chemical Superfund Site
Wilmington, Massachusetts

Dear Mr. DiLorenzo:

On December 22, 2015, the Town of Wilmington (the Town) forwarded to GeoInsight, Inc. (GeoInsight) Olin/AMEC's Draft Data Gap Analysis and Additional Field Studies Work Plan Operable Unit 3 dated December 16, 2014 (the Report). OU3 encompasses all on- and off-Property groundwater areas including Maple Meadow Brook Aquifer (MMBA), groundwater beneath the Olin Property, and groundwater located south and east of the Olin Property. At the request of the Town, GeoInsight completed a review of the Report. Based upon our review, we offer the following comments in no particular order:

- The evaluation of bedrock geology and structure presented in the Report provides only a generalized discussion regarding groundwater flow in bedrock. The updated Conceptual Site Model (CSM) does not adequately address or describe potential DAPL and/or Diffuse Layer fate and transport mechanisms via bedrock fractures at the Olin Chemical Superfund Site (OCSS), including the off-property DAPL pools (i.e., the Main Street and Western Bedrock Valley [WBV] DAPL pools).

- Additional geophysical logging should be considered to further evaluate bedrock fracture patterns and orientations in the vicinity of the DAPL pools and in the Western Bedrock Valley with respect to fate and transport of OCSS Constituents of Interest (COI). The Report indicated that geophysical logging was conducted in only five monitoring wells.

- On page 2-5, Olin relates the bedrock structural fabric to preferential flow paths, groundwater elevations, and chemical detections, and suggests that flow paths will ultimately align with the northeasterly strike of bedrock foliation and structure. This discussion is hypothetical at best and unsupported by data. The complexity of groundwater flow through bedrock at and in the environs of the Site is clearly a data gap.

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- The report should include a concise summary of the methods and data used to delineate the DAPL pools, including appropriate figures and cross sections. This discussion should also include a detailed summary of historical and recent efforts to map bedrock topography at the OCSS (as presented on Figure 2.1-5). What is the source of the bedrock contours provided on Figure 2.1-5?

- Page 2-6, Section 2.1.1.4, Hydraulic Changes: Whether or not the groundwater divide has moved significantly northwest since the cessation of pumping at the municipal wells is difficult to establish with the given data. AMEC's references to the divide moving "east" or "west" would be better described as "southeast" and "northwest".

- GeoInsight understands that groundwater monitoring events (i.e., well gauging and sampling) were conducted in May and October of 2011 as part of the OU3 Remedial Investigation (RI). We are not aware that additional hydraulic gauging has been performed in the intervening four years. It also appears that only very limited hydraulic gauging was conducted during the period that the municipal wells were shut down in 2003 and the RI events were performed in 2011. Consequently, very little hydraulic information was obtained in the approximately 12 years following the shutdown of the municipal wells. It is our opinion that the limited hydraulic gauging that was conducted in 2011 is not sufficient to document and understand current, post-municipal well-shutdown hydraulic conditions within the Maple Meadow Brook aquifer system. The lack of comprehensive hydraulic monitoring data within the Maple Meadow Brook aquifer is a significant data gap with regard to the RI.

- It is likely that the Feasibility Study (FS) will include an evaluation of remedial options to address DAPL and the diffuse layer within the Maple Meadow Brook aquifer. There is only very limited hydraulic data available to document the current hydraulic conditions within the aquifer. Most of the available hydraulic information for the aquifer was obtained while the municipal wells were still operational. Operation of these wells was a significant hydraulic influence on the aquifer. Use of the historical hydraulic data (i.e., pre-municipal well shutdown) would not be appropriate for FS evaluations. Additional hydraulic information is required to obtain a representative data set of current hydraulic conditions within the aquifer, and establish baseline hydraulic conditions upon which FS remedial evaluations could be based. Typically, such monitoring would include at least a baseline year of quarterly hydraulic gauging to observe seasonal fluctuations, and at least semi-annual gauging for several subsequent years.

- It is not clear whether the "V" shaped groundwater divides presented in Figures 2.1-1 to 2.1-4 are supposed to indicate the seasonal variation or whether it is an area of uncertainty. Regardless, a single line that passes through the high at 84 ft MSL and continues to the east on Figure 2.1-1 & 2, may be more appropriate rather than stopping at the high point.

- The interaction between OCSS groundwater and the surface water of North Pond was not adequately described or addressed as a data gap.

- A discussion on the role of peat deposits at the OCSS and how they interact with the fate and transport of COI should be included.

- Olin indicates that "NDMA is detected frequently in DAPL and the highest concentrations of NDMA detected at the Site occur in DAPL. Elevated NDMA concentrations also occur in the Diffuse Layer material." This statement appears to be unsupported by readily accessible data.

- Olin indicates that the highest concentrations of NDMA at the Site are detected in DAPL and Diffuse Layer material; however, Olin also indicates that the vertical distribution of NDMA in these strata has not been studied. It is unclear how well the distribution and fate and transport of NDMA in DAPL and Diffuse Layer material is understood. Can the DAPL pools be considered NDMA reservoirs similar to other COCs (i.e., ammonia, sulfate, chloride, and calcium)?

- Olin attributes the presence of NDMA in private bedrock water supply (PWS) wells in the WBV "to the presence of long term and persistent pumping stresses caused by groups of wells, particularly those that are deep and aligned parallel to the primary fracture orientation in the fractured bedrock aquifer." This statement appears to be conjecture and is unsupported. This may be a plausible explanation for the PWS wells located in the vicinity of Cook Avenue; however, this model does not appear to adequately describe transport of NDMA to relatively widespread PWS wells in the WBV.

- The extent of NDMA impacts to groundwater does not appear to be delineated in the northwest portion of the Site (in the vicinity of the Chestnut Street wells) and in the northeastern portion of the Site near the Town Park well. These areas appear to have characteristics similar to Olin's identified data gap in the vicinity of well GW-80 D/BR.

- How were the "extent of impacts" defined on Figures 2.3-1 and 2.3-2? What is the basis for using NDMA to evaluate the extent of impacts at the OCSS?

- Why not conduct geophysical logging on the proposed boring (GW-S/D/BR) located in the southeastern corner of the Site between GW-74 and GW-401D?

- DAPL pools depicted on Figure 2.1-7 should be labeled. DAPL pools should be superimposed on Figures 2.3-1 and 2.3-2 to better illustrate the spatial relationship between the DAPL pools and the monitoring well network.

- We do not agree with the bullet on page 1-4 "The data objectives for GW-48D, also destroyed and located on the east side of the East Ditch were met collectively by the GW-402 and GW-403 located downgradient from GW-48D." While wells GW-402 and GW-403 are located downgradient of former well GW-48, they are located approximately 500 and 1,000 feet south of former well GW-48D, respectively. The former well GW-48D was positioned directly east of Plant B.

- Wells SL-2 and SL-3 do not appear to be located on Figure 2.3-1.

- Is there a figure that depicts the locations of all monitoring wells (overburden and bedrock), former municipal water supply wells, and wells used for industrial purposes (i.e., the Sanmina wells) that are associated with the OCSS?

- Extent of impacts (i.e., Plant B constituents including TMPs, NDPhA, BEHP, VPH, and ammonia) directly east of Plant B are not delineated.

GeoInsight reserves the right to further comment on potential data gaps upon review of the OU3 Remedial Investigation Report.

If you have questions regarding these comments, please do not hesitate to contact us.

Sincerely,
GEOINSIGHT, INC.

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Enclosure
cc: Jeffrey Hull, Town Manager
Shelly Newhouse, Director of Public Health